

REMARKS

Claims 1-34 are pending in the present application. Claims 1, 15, 22 and 32 are the independent claims. In the Official Action, dated February 3, 2004, claims 1-13 and 15-34 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over U.S. Patent No. 6,073,128 (Pongracz et al.) in view of U.S. Patent No. 6,145,088 (Stevens). Claim 14 was rejected under 35 U.S.C. § 103(a) over Pongracz et al. in view of Stevens, and further in view of U.S. Patent No. 6,038,379 (Fletcher et al.). The outstanding rejections to the claims are respectfully traversed.

Summary of the Invention

The present invention provides a way to restore a target object such as a volume, directory or a pre-defined collection of files to a particular time by restoring the last full backup embodying the backup target, the last computed cumulative backup embodying the backup target and possibly the incremental backups after the last computed cumulative backup, if there are any that relate to change in the backup target.

For instance, in an exemplary embodiment generally corresponding to claim 1, the invention provides a method for generating backup files in a computer system including generating a full backup file corresponding to a first time for a set of objects in the computer system and generating one or more incremental files for the set of objects afterwards, wherein the one or more incremental files each are associated with the collective set of objects. The method further includes identifying a target object within the set of objects for the generation of cumulative backup files and then generating off-line one or more cumulative backup files corresponding to a second time (after the first time) for the target object.

Pongracz et al.

The subject of Pongracz et al. is evident from its title: “Method and Apparatus For Identifying Files Used to Restore A File” (Title) (emphasis added). Pongracz et al. thus discloses a method and apparatus that identifies backup files that will serve as the basis for restoring a (one) file. A reset stamp and a filename are used to identify all backup files related to the to-be-restored file. A number of these backup files are selected by sorting through a list of backup file records. For the backup files selected, information such as the location of the file is stored in the order in which the backup files are selected. The information, such as the location of each file selected, is provided in an order that is the reverse of the order in which the files were selected so that the oldest file is listed first. Additionally, the files may be restored in the order provided.

Independent Claims 1, 15, 22, and 32 Patentably Define Over Pongracz et al.

As stated above, claims 1-34 were rejected. Applicants maintain that independent claims 1, 15, 22, and 32 of the present invention patentably define over Pongracz et al. At the outset, Applicants would like to note that the following statement made in the present Office Action is unclear: “The entire file in Pongracz [sic] is list of files (see Fig. 3) that corresponds to a ser [sic] of objects” (Office Action, page 2)(emphasis added). First, the “entire file” is not a list of files—they are two separate things. The “entire file” is that which is copied in order to form “full backup” files (Col 1., lines 46-47), and thus the “entire file” corresponds to the to-be-restored file of Pongracz. Second, the “list of files” (or more correctly, “file list”) is that which is used to restore such an “entire file” by sorting through the relevant backup files (Col. 3, lines 45-49). To conflate these two terms and to assert that they correspond to a set of objects is a misstatement of the technology disclosed in Pongracz et al.

Applicants suspect that any confusion regarding Pongracz et al. and the applicability of its terms to the claimed invention stems from the fact that Pongracz et al. discloses the reverse process vis-à-vis the claimed invention: Pongracz et al. deals with the process of restoring a file from a list of backup files, while the claimed invention deals with the opposite process of “generating ... full backup files [and incremental file(s)] for a set of objects” (Claim 1).

Based on this observation, the “entire file” of Pongracz et al. is just one file and it cannot correspond to a set of objects, such as a volume, directory, or a pre-defined collection of files (Application, page 5, lines 6-7). The subject matter of Pongracz et al. is apparent from its title: “Method and Apparatus For Identifying Files Used to Restore A File” (Title) (emphasis added). Pongracz et al. therefore deals with the restoration of a (one) file from backup files compiled in a list and it does not provide “a way to restore a volume, directory, or a pre-defined collection of files” (Application, page 5, line 6-7).

Second, regarding the statements that “Fig. 3 of Pongracz show[s] the full backups and incremental backups of the file list and this file corresponds to the set of objects” (Office Action, page 3)(emphasis added), and “Fig. 3 of Pongracz show[s] full backups and incremental backups of the file list and this file corresponds to the target objects [within a set of objects]” (Office Action, page 6)(emphasis added), Applicants understand the Examiner to be saying that the file list is the equivalent (corresponding element) of the set of objects.

The file list of Pongracz et al. contains backup file records of all types of backup files corresponding to the to-be-restored file (Col. 3, lines 43-44). It is merely a list that links backup files with a file to be restored. As such, the file list is no more the equivalent of a set of backed-up objects than a “guest list” is the equivalent of “actual guests.” In other words, comparing a file list to actually backed-up set of objects is logically unwarranted and utterly unsupported by

the disclosure of Pongracz et al. The file list merely compiles the necessary information to restore one file, while the set of objects are backed-up to (potentially) restore that set of objects some time in the future. Thus, these statements made in rejection of independent claims 1, 15, 22, and 32 are respectfully traversed.

Accordingly, Pongracz et al. cannot be said to teach or suggest a method for generating backup files in a computer system and includes generating a full backup file for a set of objects, then generating incremental file(s) for the set of objects wherein each of the incremental file(s) is associated with the set of objects, identifying a target object within the set of objects for the generation of cumulative backup file(s) and generating those cumulative backup file(s) for the target object off-line (**claim 1**), a method for generating backup files in a computer system, comprising generating a full backup file corresponding to a first time for a set of objects in the computer system, generating incremental file(s) for the set of objects after the first time, wherein each of the incremental file(s) is associated with the set of objects, identifying a target object within the set of objects for the generation of cumulative backup files and generating cumulative backup file(s) corresponding to a second time, after the first time, for the target object, wherein generating of the cumulative backup file(s) includes analyzing incremental file(s) generated between the first and second time (**claim 15**), a computer system comprising a plurality of servers having connection(s) to a communications network and a plurality of storage components for the storage of backup information for a plurality of target objects in the form of full, incremental and cumulative backup information, wherein the incremental and cumulative backup information is associated with the collection of the plurality of target objects, wherein the full backup information is generated at a first time and the cumulative backup information is generated at a second time, wherein the storage components are accessible over the connection(s)

via the plurality of servers, wherein the cumulative backup information is generated off-line and wherein the plurality of target objects may be efficiently reconstructed to the second time associated with the cumulative backup information (**claim 22**) or a computer system comprising a plurality of servers having connection(s) to a communications network and a plurality of storage components for the storage of backup information for a plurality of target objects in the form of full, incremental and cumulative backup information, wherein the incremental and cumulative backup information is associated with the collection of the plurality of target objects, wherein the full backup information is generated at a first time and the cumulative backup information is generated at a second time, wherein the storage components are accessible over the connection(s) via the plurality of servers, wherein the plurality of target objects may be efficiently reconstructed to the second time associated with the cumulative backup information and wherein the generation of a cumulative backup file includes the analysis of incremental file(s) generated after the first time associated with the full backup information (**claim 32**).

Stevens was cited for reasons relating to off-line operation, and Fletcher et al. was cited for reasons relating to storage block mappings and formatting, but neither Stevens nor Fletcher et al. cure the above-identified deficiency of Pongracz et al. with respect to Applicant's claimed invention. Specifically, none of Pongracz et al., Stevens and Fletcher et al., taken alone or in combination, teach or suggest generating backup files in a computer system and includes generating a full backup file for a set of objects, then generating incremental file(s) for the set of objects wherein each of the incremental file(s) is associated with the set of objects, identifying a target object within the set of objects for the generation of cumulative backup file(s) and generating those cumulative backup file(s) for the target object off-line, as recited in claim 1, and similarly in claims 15, 22 and 32.

Claims 2-14, 16-21, 23-31 and 33-34 depend from claims 1, 15, 22 and 32, either directly or indirectly, and are believed allowable for the same reasons. Withdrawal of the rejection to claims 1-34 under 35 U.S.C. § 103(a) is respectfully requested.

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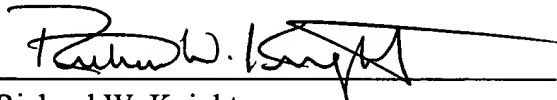
DOCKET NO.: MSFT-0176/150795.01
Application No.: 09/670,760
Office Action Dated: February 3, 2004

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CONCLUSION

Applicant believes that the present Amendment is responsive to each of the points raised by the Examiner in the Office Action, and submits that Claims 1-34 of the application are in condition for allowance. Favorable consideration and passage to issue of the application at the Examiner's earliest convenience is earnestly solicited.

Date: June 3, 2004



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